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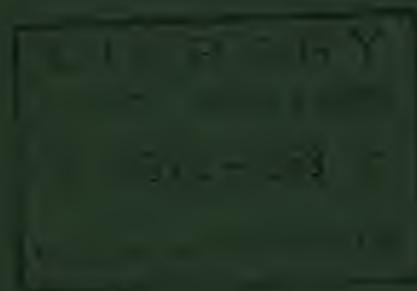
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# FOREST STATISTICS FOR THE SOUTHERN COASTAL PLAIN OF NORTH CAROLINA, 1952

by

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## FOREWORD

Through the McSweeney-McNary Act of 1928, Congress authorized the Secretary of Agriculture to conduct a comprehensive survey of the forest resources of the United States. The Forest Survey was organized by the Forest Service to carry out the provisions of the Act through the Regional Forest Experiment Stations. In the Southeastern states the Forest Survey is an activity of the Division of Forest Economics of the Southeastern Forest Experiment Station, Asheville, North Carolina.

The five-fold purpose of the Forest Survey is (1) to make a field inventory of the present supply of standing timber, (2) to ascertain the rate at which this supply is being increased through growth, (3) to determine the rate at which it is being reduced through industrial and domestic uses, fire, and other causes, (4) to determine the present consumption and the probable future trend in requirements for forest products, and (5) to interpret and correlate these finds to aid in the formulation of private and public policies regarding forest land management.

The forest resources of the State of North Carolina were originally inventoried by the Forest Survey during the period 1937-38, and these findings have been published. Since that time rapid changes have taken place in the growing stock as the result of timber cutting, forest growth, changes in land use, and better management practices. These changes can be accurately measured only by on-the-ground surveys. A resurvey of the forest resources in the Southern Coastal Plain of North Carolina was started in December 1951 and completed in November 1952. This progress report presents resurvey statistics on forest area, timber volume, growth, and drain for this area, which is designated Survey Unit No. 1.

## ACKNOWLEDGMENTS

The Southeastern Station gratefully acknowledges the cooperation of the Department of Conservation and Development and Fred H. Claridge, State Forester, for providing personnel and equipment for field crews to conduct the survey.

The Division of Forest Economics at the Southeastern Station is under the direction of James W. Cruikshank. Field inventory work was under the supervision of Robert W. Larson, and photo interpretation was done by P. C. Aldrich. Office compilation of the data was under the direction of Agnes Nichols, assisted by Louise Shuford, Samay Wenningham, and Fannie Verble.

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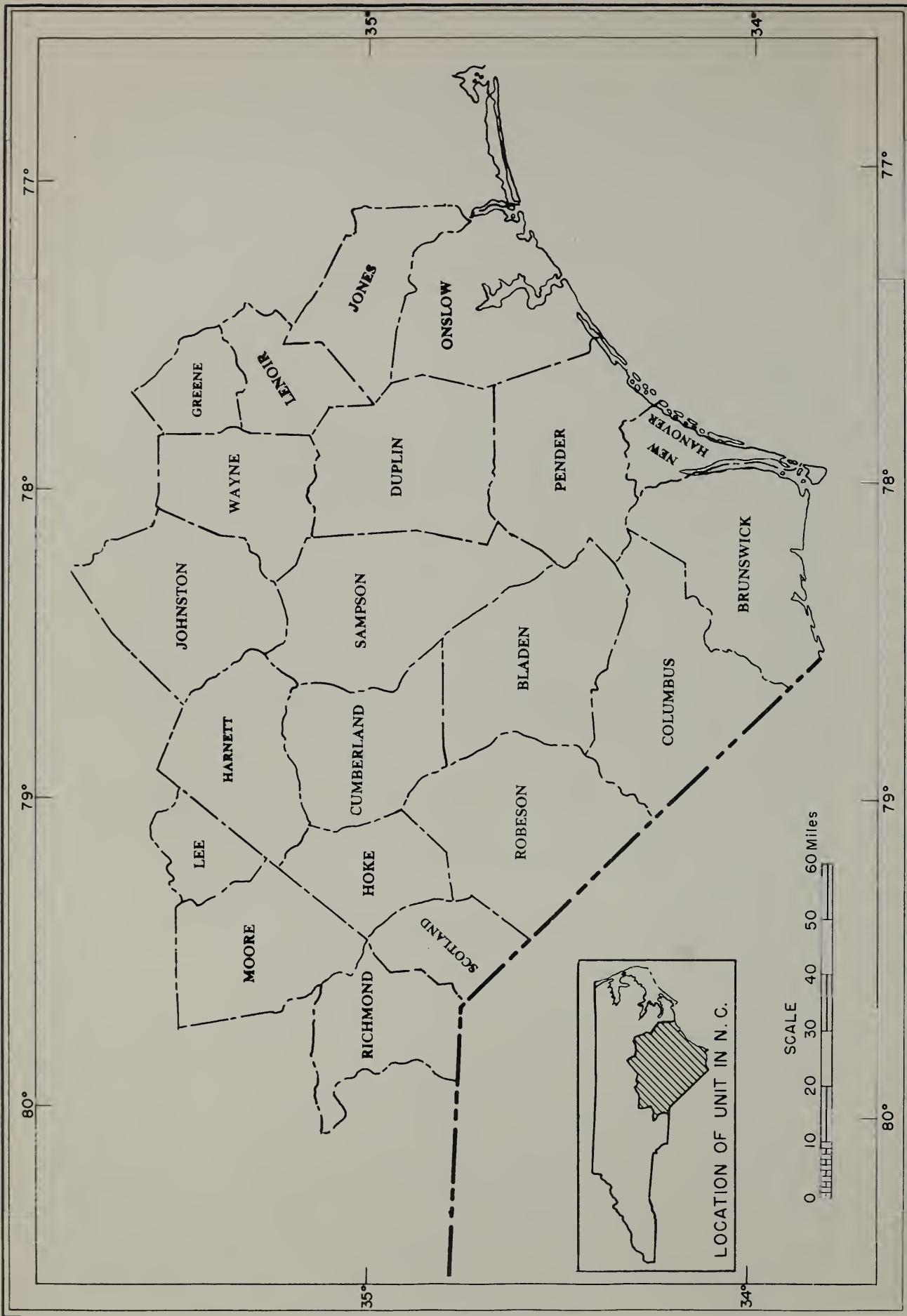


Figure 1.--Counties in the Southern Coastal Plain of North Carolina included in Survey Unit No. 1

FOREST STATISTICS FOR THE SOUTHERN COASTAL  
PLAIN OF NORTH CAROLINA, 1952

Statistical data on forest area, timber volume, growth, and drain are presented in this progress report for the 21-county area in the Southern Coastal Plain of North Carolina, designated as Survey Unit No. 1 (fig. 1). The field data were obtained by a survey made during the period December 1951 to November 1952. Ground sample plots distributed among all the individual counties were located to collect detailed information. Procedures used in selecting sample plots and collecting the basic data are outlined briefly on page 45.

Changes in area or timber volume which have taken place since the original survey in 1937 are also pointed out. These changes are based on comparisons of similar statistics obtained in both surveys and they indicate trends which are affecting the forest resource.

1952 HIGHLIGHTS AND SIGNIFICANT CHANGES

Forests occupy two-thirds of the land area.--The Southern Coastal Plain of North Carolina is a heavily wooded area. Some 5.5 million acres, or 65 percent of the total land area, are in forest (fig. 2). Practically all the forest land is capable of producing crops of commercial timber, but there are 91 thousand acres of swampland or pocosin which are so wet or infertile they will not grow timber of usable size. The acreage of forest land is slightly less now than it was in 1937, being down 1.4 percent.

Agricultural land amounts to 2.5 million acres, or 30 percent of the total. The remaining 5 percent of land area includes cities, towns, rights-of-way, coastal beaches, and marshland.

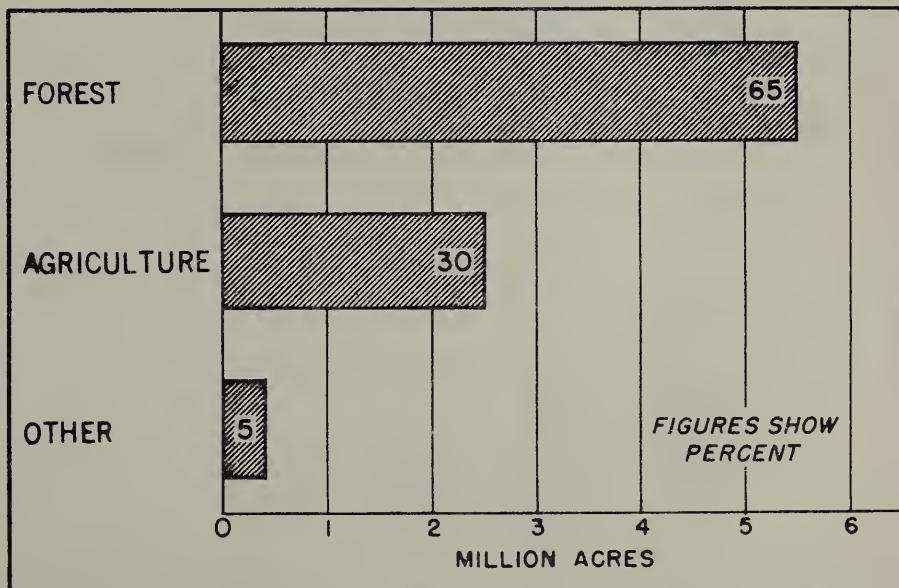


Figure 2.--Land use in the Southern Coastal Plain of North Carolina, 1952

Ninety-two percent of the commercial forest land is in private ownership. Nearly 3.5 million acres, or 64 percent, is in farm woodlands, the remainder being owned by pulp and paper mills, lumber companies, and other private owners. The 455 thousand acres of public forest lands are about equally divided between Federal and State ownership. The bulk of the Federal land is in military establishments, and the State land is mostly in game management areas or in State and school forests.

Pine forests decrease in area.--A comparison of forest type acreages found in 1937 and 1952 shows that pine forests now occur on 743 thousand fewer acres than before. The present distribution of forest area by types is pine 64 percent and hardwoods 36 percent. The 1937 distribution was pine 76 percent and hardwoods 24 percent. Identical forest type definitions were used in both surveys so the resulting data would be comparable.

This change in forest composition is typical of many areas in the Southeast. The cause can usually be traced to cutting practices which remove the preferred pine timber from the stands and leave the less desirable hardwoods to occupy the site. Under current definitions which divide the forest into types on the basis of cubic volume or number of stems, pine types occupy only 54 percent of the commercial forest land.

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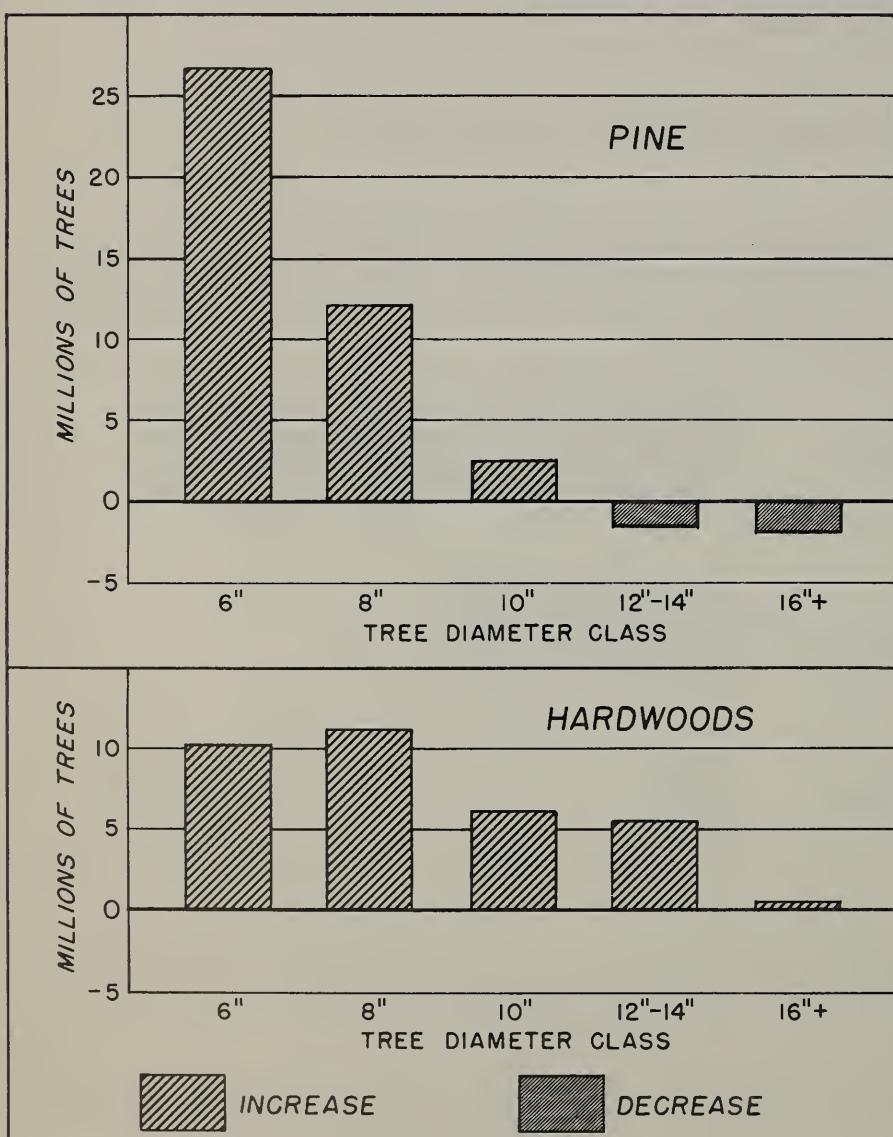


Figure 3.--Change in number of poletimber and larger trees by diameter class and species group

Stocking of young timber improves.--A comparison of the number of sound trees found at the time of each survey reveals a very significant increase in the number of small trees, particularly pines. Increases in the number of 6-, 8-, and 10-inch pines since 1937 amount to a total of 41 million trees (fig. 3). Small hardwoods in the same diameter range have also increased sharply during the period between surveys. These improvements in timber stocking may be largely attributed to improved fire protection, which has cut down the loss of young trees.

Figure 3 also shows the effect of heavy demand for the larger, more valuable trees, and the preference for pine timber. In the 12-inch and larger diameter classes the number of pine trees has decreased nearly 4 million, or about 8 percent, since 1937. There have also been decreases in the number of gums and other soft-textured hardwoods above the 18-inch diameter class. Only among the oaks and other hard-textured hardwoods are there now more large trees than in 1937.

Pine sawtimber volume down 10 percent.--Heavy utilization of pine sawtimber has reduced the volume from 7.6 billion board feet in 1937 to 6.8 billion feet in 1952, a decrease of 10 percent. During the same period hardwood sawtimber trees have added 10 percent to their volume, while cypress remained about the same (table A). These opposite trends in the volume of pine and hardwood sawtimber volume have had a balancing effect resulting in an over-all reduction in volume of only 2 percent.

Table A.--Change in volume of sawtimber, 1937 to 1952

Species group	1937 <sup>1/</sup>	1952	Change
	<u>Million bd. ft.</u>	<u>Million bd. ft.</u>	<u>Percent</u>
Pines	7,591	6,810	-10
Hardwoods	4,649	5,129	+10
Cypress	552	560	+ 1
All species	12,792	12,499	- 2

<sup>1/</sup> Original survey volumes have been recomputed to allow for differences in standards between the two surveys and to provide a uniform basis for comparison. Thus, the 1937 estimate shown here will not agree with volumes previously published.

Softwood species make up 59 percent of the present sawtimber volume. Loblolly pine with 4.7 billion board feet, or 38 percent of the total, is the predominating species. Pond pine, occupying the low, wet areas, is next in importance, followed by longleaf pine and cypress. In the hardwood species group, blackgum, tupelo, and sweetgum account for 2.8 billion feet, 23 percent of the total volume. Different varieties of oak make up most of the remaining sawtimber.

Three-fourths of the board-foot volume is found in stands having a minimum volume of 1,500 board feet per acre. Stands of large sawtimber average 7,680 board feet per acre, and small sawtimber stands average 4,480 feet. The rest of the board-foot volume is scattered throughout stands of poles and smaller trees. Nearly half of the pine sawtimber volume is in trees in the 10- and 12-inch diameter classes.

Quality of large sawtimber trees good.--In the 1952 survey, logs in each sawtimber tree were graded to determine quality, and the results have been summarized by tree-size class (table 7). Sawlogs in softwood trees were graded under the Crossett log grade rules described in USDA Technical Bulletin No. 861, while "Hardwood Log Grades for Standard Lumber" (Forest Products Laboratory publication No. D1737) were used for all hardwoods. In the pines 73 percent of the board-foot volume is in grade 1 and 2 logs. However, about half the volume in trees 16 inches and larger d.b.h. is in grade 1 logs as compared to only 12 percent in trees 10 to 14 inches in diameter. This relationship shows that quality is closely associated with tree size.

The quality of hardwood sawlogs in large sawtimber trees compares favorably with that of softwoods, 42 percent of the volume being in grade 1 and 33 percent in grade 2 logs. In the smaller 12- and 14-inch hardwood trees there is practically no volume in grade 1 and only 32 percent in grade 2. The remaining two-thirds of the volume in this class is composed of low-quality factory lumber logs, or logs from which only crossties and timbers can be manufactured.

Growing stock volume increases 6 percent.--The total growing stock volume increased 6 percent between 1937 and 1952, but the increase was confined to the hardwood species. Pine and cypress volumes show little change (table B).

Table B.--Volume comparison, all live trees 5.0 inches d.b.h. and larger, 1937 and 1952

Species group	Growing stock			Cull trees		
	1937 <sup>1/</sup>	1952	Change	1937 <sup>1/</sup>	1952	Change
	Million cu. ft.	Million cu. ft.	Percent	Million cu. ft.	Million cu. ft.	Percent
Pines	1,952	1,911	- 2.1	84	58	- 31.0
Hardwoods	1,360	1,617	+18.9	375	381	+ 1.6
Cypress	130	129	- 0.8	11	11	0.0
All species	3,442	3,657	+ 6.2	470	450	- 4.3

1/ See footnote 1, table A.

2/ Excludes limb volume of hardwood sawtimber trees.

The total growing stock volume includes all sound trees of pole size (5.0 inches d.b.h. to sawtimber size) as well as the sawtimber trees. Trees smaller than 5.0 inches in size are considered seedlings or saplings and are not assigned volume for inventory purposes.

While the survey results show only a slight decrease in the amount of pine growing stock, there has actually been a considerable shift in volume by tree size. As pointed out in figure 3, heavy increases in the number of small trees have been offset by decreases in trees 12 inches and larger in diameter. The proportion of volume in small trees is now greater than in 1937. Hardwood trees have increased in number throughout the range of diameter classes, creating a 19-percent increase in volume. There has been little actual change in the volume of cull trees.

Planting required to restock some forest land.--In the pine and upland hardwood forest types there are 260,000 acres which are in a poorly stocked condition, and which also lack the necessary seed trees for natural restocking. Most of these areas will need to be planted to bring them back into production within a reasonable length of time. About 76,000 acres can be planted by machine, 104,000 acres can be planted only by hand, and 80,000 acres are so densely covered with brush or are so inaccessible that planting does not appear practical.

Forests composed largely of young timber.--More than 70 percent of the commercial forest land is well stocked or overstocked with sound trees of all sizes; yet the trees which provide this rating are mostly seedlings and saplings, all below volume size. Only 13 percent of the forest land is well stocked with trees 5.0 inches d.b.h. and larger, and the area occupied by well stocked stands of sawtimber is less than 5 percent. These comparisons point out the fact that much of the forest area is now actually deficient in growing stock volume, but at the same time they indicate a better potential stocking in the future as the smaller trees grow into volume size.

Wood naval stores stumps total 2.2 million tons.--Cured, old-growth stumps of longleaf pine useful for the extraction of wood naval stores products are found throughout the area, with the heaviest concentrations in Brunswick, Bladen, Columbus, Pender, and Sampson Counties. They occur on a harvestable area of 1.1 million acres, and the total volume amounts to 2.2 million tons, or an average of 2 tons per acre.

Current timber growth exceeds drain.--In 1952 timber growth exceeded drain both in sawtimber and total growing stock for all species groups (fig. 4). This favorable trend resulted in an estimated annual increase in board-foot volume of 2.6 percent, and a 2.9-percent rise in the volume of growing stock.

Total sawtimber growth amounted to 891 million board feet compared to 563 million feet of drain. Growth of pine sawtimber was 621 million feet, or 70 percent of the total, yet because of heavier drain, the gain in pine volume amounts to only half the over-all volume increase. The increment in sound growing stock trees 5.0 inches d.b.h. and larger was 106 million cubic feet greater than the drain.

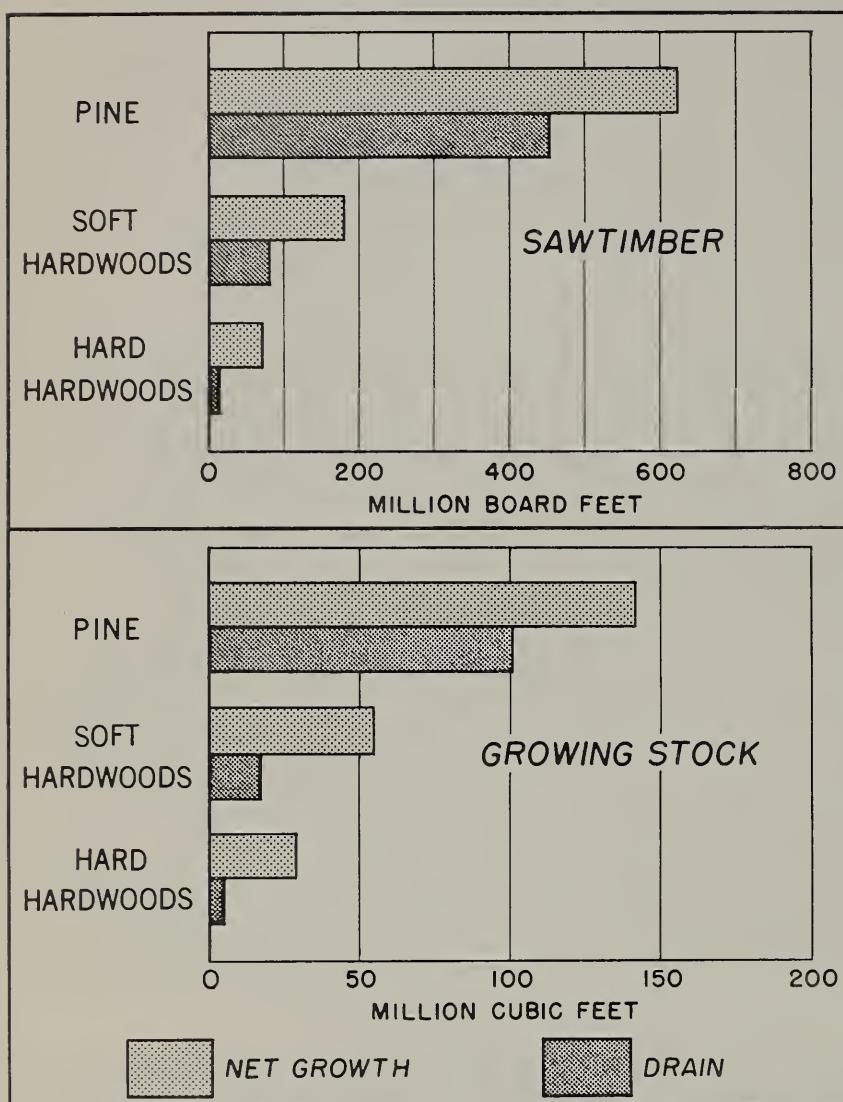


Figure 4.--Timber growth and drain relationship in the Southern Coastal Plain of North Carolina

The estimated volume of growth includes the growth on all sound trees of volume size plus the ingrowth created by smaller trees which reach volume size during the year. Mortality, or the loss of volume in trees which die from natural causes, is deducted. Timber drain volume is based on measurement and tally of stumps found on ground sample plots. Stumps of all trees cut during the past three-year period were recorded by species groups and the measurements were converted into tree volume. The average volume of drain for the three-year period was taken as the annual estimate.

It is interesting to note that the volume of ingrowth makes up a sizable proportion of the total growth estimate. Thirty-seven percent of the net board-foot growth is credited to small trees which grew into sawtimber size during the year. The rate of ingrowth is highest for the pine species in poletimber stands, where it approximates half the growth for this class. Recruitment of trees into pole size accounts for 17 percent of the cubic volume growth on all growing stock. Ingrowth will continue to be an important factor in future growth estimates because of the large number of trees in small diameter classes.

With the exception of pine sawtimber, the drain on the forests as a result of timber cutting was slightly lower in 1952 than in 1937. During the period between surveys the volume of drain has apparently reached higher levels. There is considerable evidence that annual timber drain follows a cyclical pattern, changing with the migration of sawmills, shifts in demand and utilization practices, and the ups and downs of the general business cycle. The current relationship of growth and drain leaves a margin of volume which is building up the growing stock. Whether or not this trend can continue will depend largely on the future demand for wood products and the effectiveness of forest management practices aimed at increasing the supply of timber.

Table 1.--Gross area<sup>1/</sup> by broad use class, 1952

Class of use	Area	
	<u>Thousand acres</u>	<u>Percent</u>
Forest land:		
Commercial	5,388.9	63.4
Noncommercial:		
Reserved from commercial use	4.9	0.1
Unproductive for timber use	86.0	1.0
Total forest	5,479.8	64.5
Nonforest land:		
Agriculture	2,510.5	29.5
Marsh	77.1	0.9
Urban and other <sup>2/</sup>	287.2	3.4
Total nonforest	2,874.8	33.8
Total land area	8,354.6	98.3
Total water area <sup>3/</sup>	142.7	1.7
All classes	8,497.3	100.0

1/ From U. S. Bureau of the Census, 1950.

2/ Includes urban, suburban residential, and rural industrial areas, rights-of-way, cemeteries, schools, etc.

3/ Includes 33,200 acres of water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table 2.--Ownership of commercial forest land, 1952

Class of ownership	Commercial forest land	
	<u>Thousand acres</u>	<u>Percent</u>
<b>Public land:</b>		
National forest	25.0	0.5
Indian	--	--
Other federal	201.7	3.7
Total federal	226.7	4.2
State	224.5	4.1
County and municipal	4.0	0.1
Total public	455.2	8.4
<b>Private land:</b>		
Farm	3,453.6	64.1
Other	1,480.1	27.5
Total private	4,933.7	91.6
All classes	5,388.9	100.0

Table 3.--Commercial forest area by forest type and stand-size class, 1952

(In thousand acres)

Forest type <sup>1/</sup>	Large sawtimber stands	Small sawtimber stands	Pole-timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Pine types:						
Longleaf pine	6.0	82.6	319.7	169.8	39.1	617.2
Loblolly pine	156.6	492.8	478.5	302.3	7.5	1,437.7
Shortleaf pine	1.3	17.0	28.2	7.7	--	54.2
Pond pine	28.1	126.5	237.9	371.3	44.3	808.1
Total	192.0	718.9	1,064.3	851.1	90.9	2,917.2
Other types:						
Oak-pine	46.1	73.1	170.5	327.1	9.7	626.5
Oak-hickory:						
Upland hdwds.	31.1	38.3	122.5	175.2	2.8	369.9
Scrub oak	--	--	--	68.8	133.3	202.1
Oak-gum-cypress:						
Lowland hdwds.	321.3	198.8	267.5	425.8	11.7	1,225.1
Cypress	9.9	18.5	10.8	7.3	1.6	48.1
Total	408.4	328.7	571.3	1,004.2	159.1	2,471.7
All types	600.4	1,047.6	1,635.6	1,855.3	250.0	5,388.9
Percent	11.2	19.4	30.4	34.4	4.6	100.0

<sup>1/</sup> See description of forest types and stand-size classes in appendix.

Table 4.--Net volume<sup>1/</sup> of sawtimber by species and stand-size class, 1952  
 (In million board feet)

Species <sup>2/</sup>	Large sawtimber stands	Small sawtimber stands	Pole-timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Softwoods:						
Longleaf pine	65.5	300.4	203.2	77.0	20.0	666.1
Loblolly pine	1,327.6	2,250.7	720.8	428.0	21.4	4,748.5
Pond pine	168.5	589.5	260.6	195.1	26.8	1,240.5
Shortleaf pine	27.3	81.3	38.1	8.5	--	155.2
Total pine	1,588.9	3,221.9	1,222.7	708.6	68.2	6,810.3
Cypress	308.8	97.0	81.9	20.9	3.5	512.1
Cedar	21.3	15.1	11.4	--	--	47.8
Total sftwds.	1,919.0	3,334.0	1,316.0	729.5	71.7	7,370.2
Hardwoods:						
Bl. & tupelo gum	914.0	548.3	220.7	97.7	9.7	1,790.4
Sweetgum	548.2	300.1	128.9	56.1	--	1,033.3
Yellow-poplar	160.5	90.9	54.0	14.8	--	320.2
Soft maple	157.0	80.1	30.5	22.6	3.6	293.8
Other soft hdwds.	5.6	13.9	8.1	1.5	0.6	29.7
Total	1,785.3	1,033.3	442.2	192.7	13.9	3,467.4
White & swamp chestnut oaks	132.9	91.1	72.6	23.1	2.2	321.9
Other white oaks	13.4	22.8	24.0	10.3	--	70.5
No. red & swamp red oaks	30.4	20.5	18.2	14.9	--	84.0
Other red oaks	423.2	142.5	118.5	42.9	--	727.1
Hickory	62.7	25.2	27.1	18.7	3.9	137.6
Ash	119.5	16.3	5.4	--	--	141.2
Other hard hdwds.	125.8	9.3	22.3	21.1	0.6	179.1
Total	907.9	327.7	288.1	131.0	6.7	1,661.4
Total hdwds.	2,693.2	1,361.0	730.3	323.7	20.6	5,128.8
All species	4,612.2	4,695.0	2,046.3	1,053.2	92.3	12,499.0
Percent	36.9	37.6	16.4	8.4	0.7	100.0

<sup>1/</sup> Log scale, International 1/4-inch rule.

<sup>2/</sup> See appendix for species combined with others.

Table 5.--Net volume<sup>1/</sup> of sawtimber by species and diameter class, 1952

Species	10-12	14-18	20-24	26+	All diameters	
	inches <sup>2/</sup>	inches	inches	inches	Million bd. ft.	Percent
<b>Softwoods:</b>						
Longleaf pine	400.4	221.3	44.4	--	666.1	5.3
Loblolly pine	2,099.6	2,087.6	471.3	90.0	4,748.5	38.0
Pond pine	679.0	510.0	51.5	--	1,240.5	9.9
Shortleaf pine	105.1	36.6	13.5	--	155.2	1.3
Total pine	3,284.1	2,855.5	580.7	90.0	6,810.3	54.5
Cypress	137.0	212.0	76.4	86.7	512.1	4.1
Cedar	28.9	13.9	5.0	--	47.8	0.4
Total sftwds.	3,450.0	3,081.4	662.1	176.7	7,370.2	59.0
<b>Hardwoods:</b>						
B1. & tupelo gum	383.9	1,110.0	258.3	38.2	1,790.4	14.3
Sweetgum	171.4	610.3	200.1	51.5	1,033.3	8.3
Yellow-poplar	53.2	202.2	64.8	--	320.2	2.6
Soft maple	54.9	192.1	32.3	14.5	293.8	2.3
Other soft hwdws.	14.4	15.3	--	--	29.7	0.2
Total	677.8	2,129.9	555.5	104.2	3,467.4	27.7
White & swamp chestnut oaks	78.2	145.4	39.2	59.1	321.9	2.6
Other white oaks	31.2	30.8	3.0	5.5	70.5	0.6
No. red and swamp red oaks	17.0	35.1	17.4	14.5	84.0	0.7
Other red oaks	86.8	294.5	204.4	141.4	727.1	5.8
Hickory	27.0	62.1	34.4	14.1	137.6	1.1
Ash	30.5	77.1	22.3	11.3	141.2	1.1
Other hard hwdws.	27.9	67.6	61.6	22.0	179.1	1.4
Total	298.6	712.6	382.3	267.9	1,661.4	13.3
Total hwdws.	976.4	2,842.5	937.8	372.1	5,128.8	41.0
All species	4,426.4	5,923.9	1,599.9	548.8	12,499.0	100.0
Percent	35.4	47.4	12.8	4.4	100.0	

<sup>1/</sup> Log scale, International 1/4-inch rule.

<sup>2/</sup> Ten-inch hardwoods are not included.

Table 6.--Net volume<sup>1/</sup> of sawtimber by forest type and stand-size class, 1952

(In million board feet)

Forest type <sup>2/</sup>	Large sawtimber stands	Small sawtimber stands	Pole-timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Pine types:						
Longleaf pine	35.2	265.9	210.6	34.0	10.2	555.9
Loblolly pine	1,272.6	2,251.0	616.8	151.5	5.0	4,296.9
Shortleaf pine	7.0	74.4	27.5	--	--	108.9
Pond pine	151.2	569.5	239.5	160.0	26.2	1,146.4
Total	1,466.0	3,160.8	1,094.4	345.5	41.4	6,108.1
Other types:						
Oak-pine	327.6	359.5	244.1	209.2	1.9	1,142.3
Oak-hickory:						
Upland hdwds.	204.9	118.6	174.5	120.3	2.5	620.8
Scrub oak	--	--	--	33.9	24.8	58.7
Oak-gum-cypress:						
Lowland hdwds.	2,516.8	976.2	493.4	334.8	9.2	4,330.4
Cypress	96.9	79.9	39.9	9.5	12.5	238.7
Total	3,146.2	1,534.2	951.9	707.7	50.9	6,390.9
All types	4,612.2	4,695.0	2,046.3	1,053.2	92.3	12,499.0
Percent	36.9	37.6	16.4	8.4	0.7	100.0

<sup>1/</sup> Log scale, International 1/4-inch rule.

<sup>2/</sup> See description of forest types and stand-size classes in appendix.

Table 7.--Net volume of sawtimber by species group, log grade, and  
tree-size class, 1952

PINE

Log grade	10 - 14 inches		16+ inches		All trees	
	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>
Grade 1	570.8	12.1	1,027.6	49.1	1,598.4	23.5
Grade 2	2,915.4	61.8	450.0	21.5	3,365.4	49.4
Grade 3	1,231.2	26.1	615.3	29.4	1,846.5	27.1
Total	4,717.4	100.0	2,092.9	100.0	6,810.3	100.0

OTHER SOFTWOODS

Grade 1	22.6	9.3	162.7	51.3	185.3	33.1
Grade 2	178.2	73.4	89.1	28.1	267.3	47.7
Grade 3	42.0	17.3	65.3	20.6	107.3	19.2
Total	242.8	100.0	317.1	100.0	559.9	100.0

HARDWOODS

Grade 1	15.3	0.7	1,235.0	41.9	1,250.3	24.4
Grade 2	702.4	32.2	972.7	33.0	1,675.1	32.6
Grade 3	1,463.6	67.1	739.8	25.1	2,203.4	43.0
Total	2,181.3	100.0	2,947.5	100.0	5,128.8	100.0

Table 8.--Net volume<sup>1/</sup> of all timber by species and stand-size class, 1952

(In thousand cords)

## GROWING STOCK

Species	Large sawtimber stands	Small sawtimber stands	Pole-timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Softwoods:						
Longleaf pine	179	1,007	1,756	328	86	3,356
Loblolly pine	3,317	7,362	4,322	1,607	64	16,672
Pond pine	443	1,934	1,700	893	86	5,056
Shortleaf pine	67	451	430	105	--	1,053
Total pine	4,006	10,754	8,208	2,933	236	26,137
Cypress	699	290	273	67	18	1,347
Cedar	48	43	62	6	--	159
Total sftwds.	4,753	11,087	8,543	3,006	254	27,643
Hardwoods:						
Bil. & tupelo gum	3,028	2,511	1,354	497	42	7,432
Sweetgum	1,580	1,155	965	304	--	4,004
Yellow-poplar	540	375	275	127	--	1,317
Soft maple	575	559	316	151	8	1,609
Other soft hdwds.	69	72	79	66	2	288
Total	5,792	4,672	2,989	1,145	52	14,650
White & swamp chestnut oaks	349	311	584	63	5	1,312
Other white oaks	48	132	282	76	--	538
No. red & swamp red oaks	101	108	153	64	--	426
Other red oaks	1,164	644	687	225	--	2,720
Hickory	208	114	131	82	29	564
Ash	427	102	80	--	--	609
Dogwood, persimmon	76	48	87	4	3	218
Other hard hdwds.	429	70	161	104	2	766
Total	2,802	1,529	2,165	618	39	7,153
Total hdwds.	8,594	6,201	5,154	1,763	91	21,803
All species	13,347	17,288	13,697	4,769	345	49,446
Percent	27.0	35.0	27.7	9.6	0.7	100.0

## OTHER MATERIAL

Sound culms						
Softwoods	24	181	316	225	26	772
Hardwoods <sup>2/</sup>	917	950	1,169	878	128	4,042
Rotten culms	564	379	359	252	8	1,562
Hardwood limbs	1,496	792	506	262	13	3,069
Total other material	3,001	2,302	2,350	1,617	175	9,445

<sup>1/</sup> Sound wood and bark.<sup>2/</sup> Includes noncommercial species.

Table 9.--Net volume<sup>1/</sup> of all timber by species and diameter class, 1952

(In thousand cords)

## GROWING STOCK

Species	Pole trees		Sawtimber trees				All diameters
	6 inches	8 inches	10 inches	12 inches	14-18 inches	20+ inches	
<b>Softwoods:</b>							
Longleaf pine	666	814	705	532	542	97	3,356
Loblolly pine	1,494	2,618	3,062	3,235	5,061	1,202	16,672
Pond pine	583	1,022	1,059	1,036	1,246	110	5,056
Shortleaf pine	245	375	191	125	88	29	1,053
Total pine	2,988	4,829	5,017	4,928	6,937	1,438	26,137
Cypress	39	165	170	207	465	301	1,347
Cedar	16	25	38	40	30	10	159
Total sftwds.	3,043	5,019	5,225	5,175	7,432	1,749	27,643
<b>Hardwoods:</b>							
B1. & tupelo gum	527	1,064	1,191	1,180	2,806	664	7,432
Sweetgum	346	499	423	601	1,571	564	4,004
Yellow-poplar	85	220	170	184	513	145	1,317
Soft maple	173	296	327	194	511	108	1,609
Other soft hwdws.	47	81	79	42	39	--	288
Total	1,178	2,160	2,190	2,201	5,440	1,481	14,650
White & swamp chestnut oaks	122	170	239	205	353	223	1,312
Other white oaks	77	117	166	81	78	19	538
No. red & swamp red oaks	54	77	88	48	88	71	426
Other red oaks	207	344	363	277	754	775	2,720
Hickory	63	45	103	87	158	108	564
Ash	65	95	82	97	195	75	609
Dogwood, persimmon	105	68	14	18	13	--	218
Other hard hwdws.	42	128	155	80	169	192	766
Total	735	1,044	1,210	893	1,808	1,463	7,153
Total hwdws.	1,913	3,204	3,400	3,094	7,248	2,944	21,803
All species	4,956	8,223	8,625	8,269	14,680	4,693	49,446
Percent	10.0	16.6	17.5	16.7	29.7	9.5	100.0

## OTHER MATERIAL

Sound culms							
Softwoods <sup>2/</sup>	158	217	149	91	154	3	772
Hardwoods <sup>2/</sup>	993	953	777	487	627	205	4,042
Rotten culms	44	100	126	134	497	661	1,562
Hardwood limbs	--	--	--	656	1,666	747	3,069
Total other material	1,195	1,270	1,052	1,368	2,944	1,616	9,445

<sup>1/</sup> Sound wood and bark.<sup>2/</sup> Includes noncommercial species.

Table 10.--Net volume<sup>1/</sup> of all timber by species and class of material, 1952  
 (In thousand cords)

Species	GROWING STOCK				OTHER MATERIAL	
	Sawtimber trees		Pole-timber trees	Total sound trees	Sound culls <sup>2/</sup>	Rotten culls
	Sawlog portion	Upper stems				
Softwoods:						
Longleaf pine	1,561	315	1,480	3,356	66	18
Loblolly pine	10,088	2,472	4,112	16,672	247	21
Pond pine	2,735	716	1,605	5,056	374	51
Shortleaf pine	346	87	620	1,053	44	--
Total pine	14,730	3,590	7,817	26,137	731	90
Cypress	933	210	204	1,347	40	74
Cedar	97	21	41	159	1	3
Total sftwds.	15,760	3,821	8,062	27,643	772	167
Hardwoods:						
B1. & tupelo gum	3,816	834	2,782	7,432	1,861	695
Sweetgum	2,164	572	1,268	4,004	896	107
Yellow-poplar	675	167	475	1,317	227	37
Soft maple	657	156	796	1,609	969	359
Other soft hwdws.	70	11	207	288	98	23
Total	7,382	1,740	5,528	14,650	4,051	1,221
White & swamp chestnut oaks	623	158	531	1,312	251	24
Other white oaks	144	34	360	538	230	47
No. red & swamp red oaks	165	42	219	426	72	15
Other red oaks	1,490	316	914	2,720	778	260
Hickory	291	62	211	564	119	14
Ash	308	59	242	609	190	33
Dogwood, persimmon	29	2	187	218	118	17
Scrub oak <sup>3/</sup>	--	--	--	--	852	--
Other hard hwdws.	357	84	325	766	204	10
Total	3,407	757	2,989	7,153	2,814	420
Total hwdws.	10,789	2,497	8,517	21,803	6,865	1,641
All species	26,549	6,318	16,579	49,446	7,637	1,808
Percent	53.7	12.8	33.5	100.0	80.9	19.1

<sup>1/</sup> Sound wood and bark.

<sup>2/</sup> Includes limb volume of hardwood sawtimber trees.

<sup>3/</sup> Includes noncommercial species.

Table 11.--Net volume<sup>1/</sup> of all timber by forest type and stand-size class, 1952

(In thousand cords)

## GROWING STOCK

Forest type	Large sawtimber stands	Small sawtimber stands	Pole-timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Pine types:						
Longleaf pine	102	908	1,800	185	49	3,044
Loblolly pine	3,389	7,892	4,224	714	19	16,238
Shortleaf pine	15	364	295	24	--	698
Pond pine	409	1,856	1,582	720	94	4,661
Total	3,915	11,020	7,901	1,643	162	24,641
Other types:						
Oak-pine	928	1,373	1,463	927	5	4,696
Oak-hickory:						
Upland hwdss.	595	560	1,141	519	6	2,821
Scrub oak	--	--	--	124	100	224
Oak-gum-cypress:						
Lowland hwdss.	7,604	3,975	3,062	1,526	23	16,190
Cypress	305	360	130	30	49	874
Total	9,432	6,268	5,796	3,126	183	24,805
All types	13,347	17,288	13,697	4,769	345	49,446
Percent	27.0	35.0	27.7	9.6	0.7	100.0

## OTHER MATERIAL

Pine types:						
Longleaf pine	3	15	103	61	17	199
Loblolly pine	204	589	385	82	--	1,260
Shortleaf pine	1	12	39	--	--	52
Pond pine	24	99	150	214	21	508
Total	232	715	677	357	38	2,019
Other types:						
Oak-pine	217	278	317	295	1	1,108
Oak-hickory:						
Upland hwdss.	129	74	284	202	1	690
Scrub oak	--	--	--	92	82	174
Oak-gum-cypress:						
Lowland hwdss.	2,405	1,168	1,050	652	45	5,320
Cypress	18	67	22	19	8	134
Total	2,769	1,587	1,673	1,260	137	7,426
All types	3,001	2,302	2,350	1,617	175	9,445
Percent	31.8	24.4	24.9	17.1	1.8	100.0

<sup>1/</sup> Sound wood and bark.

Table 12.--Net volume<sup>1/</sup> of all timber by species and diameter class, 1952

(In million cubic feet)

GROWING STOCK

Species	Pole trees		Sawtimber trees				All diameters
	6 inches	8 inches	10 inches	12 inches	14-18 inches	20+ inches	
<b>Softwoods:</b>							
Longleaf pine	39.0	55.3	52.5	40.1	43.2	8.4	238.5
Loblolly pine	87.4	175.5	220.4	243.1	405.0	102.5	1,233.9
Pond pine	35.0	68.7	75.4	77.6	98.8	9.4	364.9
Shortleaf pine	14.4	25.5	14.2	9.3	7.2	2.5	73.1
Total pine	175.8	325.0	362.5	370.1	554.2	122.8	1,910.4
Cypress	2.7	12.2	13.2	17.8	41.3	29.2	116.4
Cedar	1.1	1.8	3.0	3.4	2.7	0.9	12.9
Total softwds.	179.6	339.0	378.7	391.3	598.2	152.9	2,039.7
<b>Hardwoods:</b>							
Bl. & tupelo gum	30.3	69.6	85.6	91.8	221.7	54.9	553.9
Sweetgum	19.6	32.7	30.3	44.8	123.9	46.4	297.7
Yellow-poplar	4.8	14.4	12.1	13.9	40.7	12.0	97.9
Soft maple	9.9	19.5	23.2	15.1	39.8	8.9	116.4
Other soft hwds.	2.7	5.2	5.7	3.4	3.1	--	20.1
Total	67.3	141.4	156.9	169.0	429.2	122.2	1,086.0
White & swamp chestnut oaks	7.0	11.1	17.1	15.4	28.2	18.3	97.1
Other white oaks	4.2	7.7	12.0	6.1	6.0	1.6	37.6
No. red & swamp red oaks	3.1	5.0	6.3	3.7	7.0	5.9	31.0
Other red oaks	11.5	22.7	26.3	21.8	60.2	63.9	206.4
Hickory	3.6	2.8	7.4	6.8	12.7	9.0	42.3
Ash	3.6	6.3	6.0	7.7	15.7	6.1	45.4
Dogwood, persimmon	5.9	4.5	1.0	1.5	1.1	--	14.0
Other hard hwds.	2.3	8.5	11.1	6.2	13.2	15.9	57.2
Total	41.2	68.6	87.2	69.2	144.1	120.7	531.0
Total hwds.	108.5	210.0	244.1	238.2	573.3	242.9	1,617.0
All species	288.1	549.0	622.8	629.5	1,171.5	395.8	3,656.7
Percent	7.9	15.0	17.0	17.2	32.1	10.8	100.0

OTHER MATERIAL

Sound culls							
Softwoods	9.5	14.7	11.4	6.7	12.3	0.3	54.9
Hardwoods <sup>2/</sup>	56.7	62.8	55.9	32.9	49.1	17.2	274.6
Rotten culls	2.8	6.8	8.7	8.9	37.5	56.0	120.7
Hardwood limbs	--	--	--	43.3	127.3	64.1	234.7
Total other material	69.0	84.3	76.0	91.8	226.2	137.6	684.9

<sup>1/</sup> Excluding bark.

<sup>2/</sup> Includes noncommercial species.

Table 13.--Net volume<sup>1/</sup> of all timber by species and class of material, 1952  
 (In million cubic feet)

Species	GROWING STOCK				OTHER MATERIAL	
	Sawtimber trees		Pole-timber trees	Total sound trees	Sound culls <sup>2/</sup>	Rotten culls
	Sawlog portion	Upper stems				
Softwoods:						
Longleaf pine	119.0	25.2	94.3	238.5	4.9	1.5
Loblolly pine	788.5	182.5	262.9	1,233.9	17.5	1.6
Pond pine	213.1	48.1	103.7	364.9	26.0	3.5
Shortleaf pine	27.2	6.0	39.9	73.1	3.2	--
Total pine	1,147.8	261.8	500.8	1,910.4	51.6	6.6
Cypress	81.9	19.6	14.9	116.4	3.2	7.1
Cedar	8.1	1.9	2.9	12.9	0.1	0.3
Total sftwds.	1,237.8	283.3	518.6	2,039.7	54.9	14.0
Hardwoods:						
B1. & tupelo gum	300.3	68.1	185.5	553.9	136.9	52.6
Sweetgum	174.6	40.5	82.6	297.7	62.2	9.1
Yellow-poplar	54.1	12.5	31.3	97.9	16.7	2.8
Soft maple	51.8	12.0	52.6	116.4	67.4	25.0
Other soft hdwds.	5.4	1.1	13.6	20.1	6.4	1.5
Total	586.2	134.2	365.6	1,086.0	289.6	91.0
White & swamp chestnut oaks	49.6	12.3	35.2	97.1	18.4	1.8
Other white oaks	11.1	2.6	23.9	37.6	15.6	3.7
No. red & swamp red oaks	13.4	3.2	14.4	31.0	5.4	1.2
Other red oaks	117.7	28.2	60.5	206.4	59.8	21.6
Hickory	23.1	5.4	13.8	42.3	9.3	1.4
Ash	24.0	5.5	15.9	45.4	14.3	2.7
Dogwood, persimmon	2.2	0.4	11.4	14.0	7.7	1.2
Scrub oak <sup>3/</sup>	--	--	--	--	55.9	--
Other hard hdwds.	28.6	6.7	21.9	57.2	14.6	0.8
Total	269.7	64.3	197.0	531.0	201.0	34.4
Total hdwds.	855.9	198.5	562.6	1,617.0	490.6	125.4
All species	2,093.7	481.8	1,081.2	3,656.7	545.5	139.4
Percent	57.2	13.2	29.6	100.0	79.6	20.4

<sup>1/</sup> Excluding bark.

<sup>2/</sup> Includes limb volume of hardwood sawtimber trees.

<sup>3/</sup> Includes noncommercial species.

Table 14.--Average volume<sup>1/</sup> per acre of sawtimber by forest type,  
species group, and stand-size class, 1952

(In board feet)

Forest type and species group	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Other stand sizes	All stands
Longleaf pine					
Softwood	5,863	3,204	649	212	894
Hardwood	--	14	10	--	7
Loblolly pine					
Softwood	7,509	4,254	1,187	480	2,775
Hardwood	617	313	102	25	214
Shortleaf pine					
Softwood	5,222	3,328	658	--	1,509
Hardwood	310	1,046	316	--	500
Pond pine					
Softwood	5,336	4,452	1,006	429	1,399
Hardwood	52	52	--	19	20
Oak-pine					
Softwood	3,427	2,414	798	459	997
Hardwood	3,677	2,507	634	168	826
Upland hdwds.					
Softwood	554	290	138	359	295
Hardwood	6,023	2,805	1,287	331	1,383
Scrub oak					
Softwood	--	--	--	209	209
Hardwood	--	--	--	81	81
Oak-gum-cypress					
Softwood	1,136	762	466	379	661
Hardwood	6,757	4,097	1,450	440	2,928
All types					
Softwood	3,196	3,183	805	381	1,368
Hardwood	4,486	1,299	447	164	952

1/ Log scale, International 1/4-inch rule.

Table 15.--Average volume<sup>1/</sup> per acre of all trees by forest type, species group,  
and stand size, 1952

(In standard cords)

Forest type and species group	Large sawtimber stands		Small sawtimber stands		Pole- timber stands		Other stand sizes		All stands	
	Sound <sup>2/</sup>	Cull <sup>2/</sup>	Sound	Cull	Sound	Cull	Sound	Cull	Sound	Cull
Longleaf pine										
Softwood	15.6	--	11.0	0.1	5.6	0.1	1.1	0.1	4.9	0.1
Hardwood	1.3	0.5	(3/)	0.1	0.1	0.2	(3/)	0.3	(3/)	0.2
Loblolly pine										
Softwood	19.0	0.2	14.1	0.3	7.6	0.2	2.0	(3/)	9.9	0.2
Hardwood	2.7	1.1	1.9	0.9	1.2	0.6	0.3	0.2	1.4	0.7
Shortleaf pine										
Softwood	11.0	--	17.2	0.1	8.0	0.6	3.1	--	10.2	0.3
Hardwood	0.8	0.8	4.2	0.6	2.5	0.8	--	--	2.6	0.6
Pond pine										
Softwood	13.3	0.2	14.5	0.5	6.6	0.6	1.8	0.4	5.6	0.5
Hardwood	1.3	0.6	0.1	0.3	--	0.1	0.1	0.1	0.1	0.2
Oak-pine										
Softwood	8.4	--	7.6	(3/)	4.2	(3/)	1.8	0.1	3.6	(3/)
Hardwood	11.7	4.7	11.2	3.8	4.4	1.8	1.0	0.8	3.9	1.7
Upland hardwoods										
Softwood	1.5	--	1.3	--	1.1	--	1.3	(3/)	1.2	(3/)
Hardwood	17.6	4.1	13.4	1.9	8.2	2.3	1.6	1.1	6.4	1.8
Scrub oak										
Softwood	--	--	--	--	--	--	0.7	0.1	0.7	0.1
Hardwood	--	--	--	--	--	--	0.4	0.8	0.4	0.8
Oak-gum-cypress										
Softwood	2.6	0.1	2.2	0.2	1.7	0.1	1.4	0.1	1.9	0.1
Hardwood	21.3	7.2	17.7	5.5	9.8	3.7	2.2	1.5	11.5	4.2
All types										
Softwood	7.9	0.1	10.6	0.2	5.2	0.2	1.5	0.1	5.1	0.2
Hardwood	14.3	4.9	5.9	2.0	3.2	1.2	0.9	0.7	4.0	1.6

1/ Sound wood and bark.

2/ Sound trees; cull trees.

3/ Less than 0.05 cords per acre.

Table 16.--Number of trees<sup>1/</sup> by species group, quality class, and tree size,

1952

(In thousands of trees)

Species group and quality class	Sapling- size trees	Pole- size trees	Small sawtimber trees	Large sawtimber trees	All trees
Yellow pines:					
Sound trees	559,024	162,051	70,662	8,309	800,046
Sound culls	27,522	9,262	2,288	244	39,316
Rotten culls	2,038	236	497	213	2,984
Total	588,584	171,549	73,447	8,766	842,346
Other softwoods:					
Sound trees	25,414	4,589	3,228	855	34,086
Sound culls	1,491	449	179	18	2,137
Rotten culls	--	114	142	219	475
Total	26,905	5,152	3,549	1,092	36,698
Soft-textured hwds.:					
Sound trees	651,193	81,186	19,352	8,411	760,142
Sound culls	140,549	26,227	2,485	857	170,118
Rotten culls	10,132	8,356	2,868	3,477	24,833
Total	801,874	115,769	24,705	12,745	955,093
Hard-textured hwds.:					
Sound trees	473,736	50,149	8,540	4,156	536,581
Sound culls <sup>2/</sup>	432,973	36,196	2,060	595	471,824
Rotten culls	8,647	3,904	1,123	1,260	14,934
Total	915,356	90,249	11,723	6,011	1,023,339
All species	2,332,719	382,719	113,424	28,614	2,857,476

<sup>1/</sup> All trees 1.0 inch d.b.h. and larger.

<sup>2/</sup> Includes scrub oak and noncommercial species.

Table 17.--Area<sup>1/</sup> of seedling, sapling, and poorly stocked stands by  
plantability class, 1952  
 (In thousands of acres)

Forest type	No planting required <sup>2/</sup>	Suitable for machine planting	Hand planting required	All classes
Longleaf pine	174.0	15.7	19.2	208.9
Loblolly pine	294.9	9.1	5.8	309.8
Shortleaf pine	6.6	--	1.1	7.7
Pond pine	361.0	7.5	12.0	380.5
Oak-pine	320.8	7.9	8.1	336.8
Upland hwdws.	173.4	0.9	3.7	178.0
Scrub oak	68.0	35.2	54.5	157.7
All types	1,398.7	76.3	104.4	1,579.4
Percent	88.6	4.8	6.6	100.0

1/ Excludes 1,273,200 acres in oak-gum-cypress type, and 79,500 acres of other types on which planting is impractical due to dense brush cover.

2/ Sufficient seed trees present or area is restocking naturally.

Table 18.--Stocking on commercial forest area by forest type and tree-size class, 1952  
 (In thousands of acres)

GROWING STOCK OF ALL SIZES

Forest type	Non-stocked 0-9%	Poor stocking 10-39%	Medium stocking 40-69%	Good stocking 70-99%	Over-stocked 100+%	Total area
Longleaf pine	25.7	217.6	163.3	70.1	140.5	617.2
Loblolly pine	2.3	98.1	144.2	148.4	1,044.7	1,437.7
Shortleaf pine	--	1.1	--	6.0	47.1	54.2
Pond pine	39.3	130.7	89.1	84.4	464.6	808.1
Oak-pine	9.7	61.6	45.0	56.3	453.9	626.5
Upland hdwds.	2.8	6.7	43.1	40.5	276.8	369.9
Scrub oak	122.0	63.3	4.7	4.5	7.6	202.1
Lowland hdwds.	6.5	84.3	140.1	143.5	850.7	1,225.1
Cypress	1.6	4.6	--	6.4	35.5	48.1
All types	209.9	668.0	629.5	560.1	3,321.4	5,388.9
Percent	3.9	12.4	11.7	10.4	61.6	100.0

GROWING STOCK 5.0 INCHES DBH AND LARGER

Longleaf pine	196.0	310.1	62.5	38.4	10.2	617.2
Loblolly pine	240.4	687.7	266.8	137.7	105.1	1,437.7
Shortleaf pine	7.7	18.8	18.4	5.0	4.3	54.2
Pond pine	362.5	317.9	81.9	35.9	9.9	808.1
Oak-pine	271.3	241.9	74.1	24.4	14.8	626.5
Upland hdwds.	139.6	135.6	78.4	13.8	2.5	369.9
Scrub oak	188.5	13.6	--	--	--	202.1
Lowland hdwds.	337.4	404.0	215.2	160.5	108.0	1,225.1
Cypress	6.3	17.0	12.3	3.6	8.9	48.1
All types	1,749.7	2,146.6	809.6	419.3	263.7	5,388.9
Percent	32.5	39.8	15.0	7.8	4.9	100.0

SAWTIMBER GROWING STOCK

Longleaf pine	390.0	193.7	26.2	4.9	2.4	617.2
Loblolly pine	497.1	639.1	201.7	82.9	16.9	1,437.7
Shortleaf pine	20.5	27.2	4.0	2.5	--	54.2
Pond pine	509.4	228.9	50.5	16.8	2.5	808.1
Oak-pine	354.8	217.9	38.8	12.6	2.4	626.5
Upland hdwds.	210.1	135.8	21.3	2.7	--	369.9
Scrub oak	190.8	11.3	--	--	--	202.1
Lowland hdwds.	460.7	473.9	185.1	68.8	36.6	1,225.1
Cypress	10.9	25.9	7.6	2.5	1.2	48.1
All types	2,644.3	1,953.7	535.2	193.7	62.0	5,388.9
Percent	49.1	36.3	9.9	3.6	1.1	100.0

Table 19.--Area of stump land and tonnage of wood naval stores stumps  
 by availability class, 1952

Availability class	Area	No.	Tonnage
		stumps	<sup>1/</sup>
	<u>Thousand</u> <u>acres</u>	<u>Thousand</u> <u>stumps</u>	<u>Thousand</u> <u>tons</u>
Merchantable area	1,092.9	17,197	2,218
Marginal area <sup>1/</sup>	179.7	1,763	227
Potential area <sup>2/</sup>	125.3	1,240	160
Inaccessible area	4.8	37	5
All classes	1,402.7	20,237	2,610

1/ Stump-land areas less than 25 acres in extent.

2/ Areas unworkable at present due to density of timber stands.

Table 20.--Net annual growth of sawtimber by stand-size class and species group, 1952

(In thousand board feet)

Stand-size class	Softwoods		Soft-textured hardwoods	Hard-textured hardwoods	All species
	Pine	Other			
Sawtimber stands	338,648	10,707	131,905	51,167	532,427
Poletimber stands	214,587	4,279	33,691	14,111	266,668
Other stands	68,059	879	15,282	8,090	92,310
All stands	621,294	15,865	180,878	73,368	891,405

Table 21.--Net annual growth of growing stock by stand-size class and species group, 1952

(In thousand cords)

Stand-size class	Softwoods		Soft-textured hardwoods	Hard-textured hardwoods	All species
	Pine	Other			
Sawtimber stands	839	24	489	215	1,567
Poletimber stands	942	16	232	167	1,357
Other stands	326	5	68	49	448
All stands	2,107	45	789	431	3,372

Table 22.--Average growth of sawtimber per acre by forest type  
and stand-size class, 1952

(In board feet)

Forest type	Stand-size class			All stands
	Sawtimber	Poletimber	Other stands	
Longleaf pine	303	94	19	99
Loblolly pine	394	231	53	266
Shortleaf pine	331	131	--	180
Pond pine	303	171	41	129
Cypress	136	189	98	140
Oak-pine	351	166	72	151
Oak-hickory	214	111	54	103
Lowland hdwds.	321	143	70	192
Scrub oak	--	--	24	24
All types	342	163	51	174

Table 23.--Average growth of growing stock per acre by forest type  
and stand-size class, 1952

(In standard cords)

Forest type	Stand-size class			All stands
	Sawtimber	Poletimber	Other stands	
Longleaf pine	0.6	0.5	0.1	0.4
Loblolly pine	1.0	1.1	0.3	0.9
Shortleaf pine	1.1	0.8	0.7	0.9
Pond pine	0.8	0.7	0.2	0.4
Cypress	0.7	0.4	0.4	0.6
Oak-pine	1.1	0.7	0.3	0.5
Oak-hickory	0.8	0.5	0.2	0.4
Lowland hdwds.	1.0	0.9	0.3	0.7
Scrub oak	--	--	0.1	0.1
All types	1.0	0.8	0.2	0.6

Table 24.--Annual net growth percentages<sup>1/</sup> for sawtimber volumes by stand-size class and species group, 1952

Stand-size class	Softwoods		Soft-textured hardwoods	Hard-textured hardwoods	All species
	Pine	Other			
Sawtimber stands	7.04	2.42	4.68	4.14	5.72
Poletimber stands	17.55	4.59	7.62	4.90	13.03
Other stands	8.76	3.60	7.40	5.88	8.06
All stands	9.12	2.83	5.22	4.42	7.13

1/ For use with board-foot volumes.

Table 25.--Annual net growth percentages<sup>1/</sup> for growing stock volumes by stand-size class and species group, 1952

Stand-size class	Softwoods		Soft-textured hardwoods	Hard-textured hardwoods	All species
	Pine	Other			
Sawtimber stands	5.68	2.22	4.67	4.96	5.12
Poletimber stands	11.48	4.78	7.76	7.71	9.91
Other stands	10.29	5.49	5.68	7.46	8.76
All stands	8.06	2.99	5.39	6.03	6.82

1/ For use with volumes in cubic feet or standard cords.

Table 26.--Average annual drain on sawtimber by tree-size class and  
species group

(In thousand board feet)

Tree-size class	Softwoods		Soft-textured hardwoods	Hard-textured hardwoods	All species
	Pine	Other			
Small sawtimber	261,043	3,281	5,479	6,851	276,654
Large sawtimber	197,371	3,463	77,535	7,911	286,280
All trees	458,414	6,744	83,014	14,762	562,934

Table 27.--Average annual drain on growing stock by tree-size class and  
species group

(In thousand cords)

Tree-size class	Softwoods		Soft-textured hardwoods	Hard-textured hardwoods	All species
	Pine	Other			
Pole trees	158	1	17	23	199
Small sawtimber	729	8	14	19	770
Large sawtimber	441	7	174	18	640
All trees	1,328	16	205	60	1,609

Table 28.--Net change in sawtimber volume by species group, 1952

(In thousand board feet)

Item	Softwoods		Soft-textured hardwoods	Hard-textured hardwoods	All species
	Pine	Other			
Net volume, Jan. 1, 1952	6,810,349	559,913	3,467,339	1,661,419	12,499,020
Total growth	651,471	20,232	188,229	79,362	939,294
Mortality	30,177	4,367	7,351	5,994	47,889
Net growth	621,294	15,865	180,878	73,368	891,405
Drain	458,414	6,744	83,014	14,762	562,934
Loss or gain	+162,880	+9,121	+97,864	+58,606	+328,471
Net volume, Jan. 1, 1953	6,973,229	569,034	3,565,203	1,720,025	12,827,491
Percent change	+ 2.39	+ 1.63	+ 2.82	+ 3.53	+ 2.63

Table 29.--Net change in growing stock by species group, 1952

(In thousand cords)

Item	Softwoods		Soft-textured hardwoods	Hard-textured hardwoods	All species
	Pine	Other			
Growing stock, Jan. 1, 1952	26,137	1,506	14,650	7,153	49,446
Total growth	2,224	55	827	447	3,553
Mortality	117	10	38	16	181
Net growth	2,107	45	789	431	3,372
Drain	1,328	16	205	60	1,609
Loss or gain	+779	+29	+584	+371	+1,763
Growing stock, Jan. 1, 1953	26,916	1,535	15,234	7,524	51,209
Percent change	+2.98	+1.93	+3.99	+5.19	+3.57

Table 30.--County area by broad use class, 1952

County	Total area <sup>1/</sup>	Nonforest area		Forest land		
		Land	Water	Non- commercial	Commercial	
	Thousand acres	Thousand acres	Thousand acres	Thousand acres	Thousand acres	Percent
Bladen	570.3	138.3	10.5	4.7	416.8	74.5
Brunswick	580.5	93.2	27.4	29.6	430.3	77.8
Columbus	610.6	167.8	10.2	2.3	430.3	71.7
Cumberland	423.7	157.8	1.9	2.3	261.7	62.0
Duplin	526.7	194.1	0.6	2.5	329.5	62.6
Greene	172.2	89.2	0.2	--	82.8	48.1
Harnett	388.5	164.4	2.2	--	221.9	57.4
Hoke	265.6	102.1	0.9	2.2	160.4	60.6
Johnston	508.8	252.3	2.5	2.5	251.5	49.7
Jones	299.5	63.8	1.3	12.0	222.4	74.6
Lee	163.8	41.3	0.8	--	121.7	74.7
Lenoir	250.2	121.5	2.0	--	126.7	51.0
Moore	430.7	105.5	1.5	--	323.7	75.4
New Hanover	144.0	45.9	21.8	1.2	75.1	61.5
Onslow	515.8	107.5	35.9	7.6	364.8	76.0
Pender	556.2	85.9	11.5	24.0	434.8	79.8
Richmond	309.1	104.4	5.1	--	199.6	65.7
Robeson	606.7	313.8	5.3	--	287.6	47.8
Sampson	616.3	234.6	0.2	--	381.5	61.9
Scotland	202.9	97.8	0.2	--	104.9	51.8
Wayne	355.2	193.6	0.7	--	160.9	45.4
Unit total	8,497.3	2,874.8	142.7	90.9	5,388.9	64.5

1/ Gross area from Bureau of the Census, 1950.

Table 31.--Ownership of commercial forest land by county, 1952

County	Private		Public					
			National forest	Other federal	State	County, city, town	Total public	
	Thousand acres	Percent	Thousand acres	Thousand acres	Thousand acres	Thousand acres	Thousand acres	Percent
Bladen	385.0	92.4	--	2.7	29.1	--	31.8	7.6
Brunswick	416.8	96.9	--	13.2	0.3	--	13.5	3.1
Columbus	427.6	99.4	--	--	2.7	(1/)	2.7	0.6
Cumberland	232.4	88.8	--	29.0	(1/)	0.3	29.3	11.2
Duplin	321.5	97.6	--	--	8.0	--	8.0	2.4
Greene	82.7	99.9	--	--	--	0.1	0.1	0.1
Harnett	221.9	100.0	--	--	--	--	--	--
Hoke	79.1	49.3	--	79.8	1.5	--	81.3	50.7
Johnston	251.0	99.8	--	--	0.3	0.2	0.5	0.2
Jones	171.1	76.9	25.0	0.3	26.0	--	51.3	23.1
Lee	121.7	100.0	--	--	--	(1/)	(1/)	--
Lenoir	125.7	99.2	--	--	0.4	0.6	1.0	0.8
Moore	322.4	99.6	--	--	1.3	(1/)	1.3	0.4
New Hanover	74.1	98.7	--	--	0.7	0.3	1.0	1.3
Onslow	247.5	67.8	--	71.0	46.0	0.3	117.3	32.2
Pender	384.0	88.3	--	--	50.8	--	50.8	11.7
Richmond	163.3	81.8	--	0.8	35.4	0.1	36.3	18.2
Robeson	287.4	99.9	--	--	0.1	0.1	0.2	0.1
Sampson	381.4	100.0	--	--	0.1	(1/)	0.1	(2/)
Scotland	77.4	73.8	--	4.3	21.2	2.0	27.5	26.2
Wayne	159.7	99.3	--	0.6	0.6	(1/)	1.2	0.7
Unit total	4,933.7	91.6	25.0	201.7	224.5	4.0	455.2	8.4

1/ Less than 50 acres.

2/ Less than 0.05 percent.

Table 32.--Net volume<sup>1/</sup> of sawtimber by county and species group, 1952  
 (In million board feet)

County	Softwoods <sup>2/</sup>	Gum, maple, and yellow- poplar <sup>3/</sup>	Other hardwoods	All species
Bladen	556.6	267.1	116.7	940.4
Brunswick	503.4	164.3	107.3	775.0
Columbus	556.7	343.9	176.4	1,077.0
Cumberland	275.8	54.9	38.1	368.8
Duplin	511.1	219.8	115.4	846.3
Greene	288.7	106.1	29.9	424.7
Harnett	213.1	140.2	107.1	460.4
Hoke	240.5	107.9	8.2	356.6
Johnston	536.1	284.4	159.8	980.3
Jones	424.2	242.4	113.1	779.7
Lee	95.0	33.7	61.0	189.7
Lenoir	210.2	88.0	51.3	349.5
Moore	273.6	147.8	200.1	621.5
New Hanover	80.8	9.9	2.1	92.8
Onslow	562.3	157.5	30.2	750.0
Pender	491.1	234.7	95.6	821.4
Richmond	177.7	114.5	36.9	329.1
Robeson	389.7	393.7	78.1	861.5
Sampson	423.2	230.8	79.6	733.6
Scotland	156.5	57.7	10.0	224.2
Wayne	403.9	68.1	44.5	516.5
Unit total	7,370.2	3,467.4	1,661.4	12,499.0

<sup>1/</sup> Log scale, International 1/4-inch rule.

<sup>2/</sup> Includes pine, cypress, and cedar.

<sup>3/</sup> Includes other soft-textured hardwoods.

Table 33.--Net volume<sup>1/</sup> of sawtimber by county, broad species group,  
and diameter-class group, 1952

County	Softwoods		Hardwoods		Softwoods	Hardwoods
	9-14 inches	15+ inches	11-14 inches	15+ inches		
	<u>Million</u> <u>bd. ft.</u>	<u>Million</u> <u>bd. ft.</u>	<u>Million</u> <u>bd. ft.</u>	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>	<u>Percent</u>
Bladen	355.3	201.3	194.6	189.2	59.2	40.8
Brunswick	364.2	139.2	119.0	152.6	65.0	35.0
Columbus	381.7	175.0	211.6	308.7	51.7	48.3
Cumberland	225.4	50.4	53.4	39.6	74.8	25.2
Duplin	320.0	191.1	138.1	197.1	60.4	39.6
Greene	135.1	153.6	37.1	98.9	68.0	32.0
Harnett	141.7	71.4	119.3	128.0	46.3	53.7
Hoke	151.0	89.5	43.0	73.1	67.4	32.6
Johnston	299.8	236.3	163.7	280.5	54.7	45.3
Jones	277.3	146.9	113.9	241.6	54.4	45.6
Lee	81.0	14.0	50.6	44.1	50.1	49.9
Lenoir	126.9	83.3	46.2	93.1	60.1	39.9
Moore	198.7	74.9	184.4	163.5	44.0	56.0
New Hanover	51.5	29.3	6.0	6.0	87.1	12.9
Onslow	414.4	147.9	75.7	112.0	75.0	25.0
Pender	372.5	118.6	124.9	205.4	59.8	40.2
Richmond	168.7	9.0	64.8	86.6	54.0	46.0
Robeson	246.7	143.0	215.1	256.7	45.2	54.8
Sampson	292.1	131.1	141.7	168.7	57.7	42.3
Scotland	92.8	63.7	29.7	38.0	69.8	30.2
Wayne	263.4	140.5	48.5	64.1	78.2	21.8
Unit total	4,960.2	2,410.0	2,181.3	2,947.5	59.0	41.0

1/ Log scale, International 1/4-inch rule.

Table 34.--Net volume<sup>1/</sup> of all timber by county, pulping species group, and tree-

diameter group, 1952

(In thousand cords)

## GROWING STOCK

County	Yellow pines		Other softwoods		Soft-text. hdwds.		Hard-text. hdwds.		All species
	5 - 12 inches	13 + inches	5 - 12 inches	13 + inches	5 - 12 inches	13 + inches	5 - 12 inches	13 + inches	
Bladen	1,320	647	40	59	737	489	256	245	3,793
Brunswick	1,303	438	94	114	343	328	136	215	2,971
Columbus	1,137	665	106	83	705	689	275	366	4,026
Cumberland	720	308	21	7	184	99	120	75	1,534
Duplin	1,226	591	11	41	575	462	258	230	3,394
Greene	413	425	26	25	103	222	115	58	1,387
Harnett	627	266	3	9	239	293	247	208	1,892
Hoke	506	303	11	28	190	219	32	13	1,302
Johnston	1,035	761	--	--	418	600	317	322	3,453
Jones	814	466	19	90	300	493	188	226	2,596
Lee	594	61	1	--	124	68	206	102	1,156
Lenoir	420	258	15	25	164	183	141	107	1,313
Moore	1,132	211	37	46	678	256	683	336	3,379
New Hanover	218	57	32	37	55	17	12	5	433
Onslow	1,239	689	14	33	355	322	95	60	2,807
Pender	1,434	394	113	84	459	469	315	190	3,458
Richmond	875	95	3	--	293	240	123	74	1,703
Robeson	714	473	89	73	911	807	90	165	3,322
Sampson	1,145	456	37	32	577	427	195	162	3,031
Scotland	312	217	19	20	130	114	14	21	847
Wayne	578	594	9	--	189	124	64	91	1,649
Unit total	17,762	8,375	700	806	7,729	6,921	3,882	3,271	49,446

## OTHER MATERIAL

Bladen	56	18	2	13	247	285	108	95	824
Brunswick	58	23	1	28	174	161	133	110	688
Columbus	55	16	1	9	288	365	80	186	1,000
Cumberland	29	15	3	2	65	43	63	30	250
Duplin	37	13	--	--	101	201	155	92	599
Greene	9	5	2	--	35	53	26	18	148
Harnett	8	10	--	--	52	87	168	78	403
Hoke	5	10	--	7	58	58	34	8	180
Johnston	41	--	--	--	171	273	149	128	762
Jones	43	8	--	3	69	170	64	53	410
Lee	6	4	--	--	16	32	31	61	150
Lenoir	6	3	--	2	21	65	63	41	201
Moore	49	5	--	--	109	90	141	107	501
New Hanover	8	3	--	3	16	11	15	2	58
Onslow	72	12	--	--	133	158	67	30	472
Pender	72	13	9	16	241	175	139	100	765
Richmond	17	--	--	--	76	91	89	34	307
Robeson	17	--	8	5	251	352	78	61	772
Sampson	31	13	4	--	133	156	206	65	608
Scotland	3	--	--	--	39	30	34	5	111
Wayne	5	23	--	--	46	75	44	43	236
Unit total	627	194	30	88	2,341	2,931	1,887	1,347	9,445

<sup>1/</sup> Sound wood and bark.

Table 35.--Average annual sawtimber drain by county and species group<sup>1/</sup>

(In thousand board feet)

County	Pine	Other softwoods	Soft-textured hardwoods	Hard-textured hardwoods	All species
Bladen	34,055	--	19,711	2,821	56,587
Brunswick	10,708	--	--	--	10,708
Columbus	44,499	1,796	27,614	1,317	75,226
Cumberland	27,435	--	414	1,598	29,447
Duplin	40,522	--	7,572	--	48,094
Greene	12,650	1,505	--	--	14,155
Harnett	16,426	--	222	1,441	18,089
Hoke	10,160	305	831	--	11,296
Johnston	41,559	--	672	1,226	43,457
Jones	5,714	--	--	--	5,714
Lee	10,700	--	--	1,034	11,734
Lenoir	11,424	--	1,278	--	12,702
Moore	16,565	--	--	1,725	18,290
New Hanover	11,331	2,022	--	--	13,353
Onslow	27,366	--	5,786	1,467	34,619
Pender	26,187	373	3,472	--	30,032
Richmond	24,847	147	2,503	332	27,829
Robeson	44,504	596	9,887	470	55,457
Sampson	27,943	--	2,000	1,331	31,274
Scotland	4,808	--	--	--	4,808
Wayne	9,011	--	1,052	--	10,063
Unit total	458,414	6,744	83,014	14,762	562,934

<sup>1/</sup> Estimates of timber drain by county are less accurate than inventory volumes, and use of individual county statistics should be avoided. For general use, data for a minimum of 10 counties should be combined.

Table 36.--Average annual drain on growing stock by county and species group<sup>1/</sup>

(In thousand cords)

County	Pine	Other softwoods	Soft-textured hardwoods	Hard-textured hardwoods	All species
Bladen	117	--	45	8	170
Brunswick	37	--	--	--	37
Columbus	123	4	62	12	201
Cumberland	73	--	4	6	83
Duplin	112	--	18	1	131
Greene	27	3	--	--	30
Harnett	49	--	1	4	54
Hoke	28	1	3	--	32
Johnston	121	--	4	3	128
Jones	18	--	--	--	18
Lee	29	--	--	3	32
Lenoir	25	--	3	--	28
Moore	59	--	--	5	64
New Hanover	33	4	--	--	37
Onslow	81	--	13	9	103
Pender	76	2	8	--	86
Richmond	70	1	6	1	78
Robeson	115	1	29	3	148
Sampson	92	--	7	5	104
Scotland	14	--	--	--	14
Wayne	29	--	2	--	31
Unit total	1,328	16	205	60	1,609

<sup>1/</sup> Estimates of timber drain by county are less accurate than inventory volumes, and use of individual county statistics should be avoided. For general use, data for a minimum of 10 counties should be combined.

## DEFINITION OF TERMS

### Land-Use Classes

Forest land: Includes (a) lands which are at least 10 percent stocked with trees of any size and capable of producing sawtimber or other wood products, and (b) lands from which the trees described in (a) have been removed to less than 10-percent stocking but which have not been developed for other use; subdivided into the following classes:

Commercial: Forest land which is (a) producing, or physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or in the future, and (c) not withdrawn from timber use.

Noncommercial: Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land, and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Nonforest land: Includes land in the following classes:

Agriculture: Land under cultivation or in pasture including farm-yards and work lots, and idle or abandoned farmland which has not reverted to forest.

Marsh: Low, wet areas characterized by a heavy growth of grass and reeds and an absence of timber.

Urban and other areas: Includes towns, residential and industrial suburban areas, school yards, cemeteries, roads, railroads, power lines, and other rights-of-way.

Water: Includes lakes, bays, and estuaries over 40 acres in size, and streams, canals, and sloughs at least one-eighth of a mile in width which are classed as "inland water" by the Bureau of the Census. Smaller lakes and ponds between one acre and 40 acres in size, and waterways between 120 feet and 660 feet in width, which are classed as land area by the Bureau of the Census, are also included as water areas.

## Forest Types

Forest type is determined on the basis of cubic volume for all stand sizes except seedlings and saplings (stand size 4), in which case the number of stems are the criteria.

Pine types: Forests in which 50 percent or more of the stand is in pine species. Plurality of volume or number of trees is used to determine the specific type.

Oak-pine type: Forests in which 50 percent or more of the stand is hardwood, usually upland oaks, but in which southern yellow pines make up 25-49 percent of the stand.

### Oak-hickory type

Upland hardwood: Forests in which 50 percent or more of the stand is composed of upland oak, hickory, yellow-poplar, maple, gum, and other hardwoods, except where pines comprise 25-49 percent of the stand.

Scrub oak: Upland forests in which 50 percent or more of the stand is composed of scrub oak species, except where pines comprise 25-49 percent of the stand.

### Oak-gum-cypress type

Lowland hardwood: Bottomland forests in which 50 percent or more of the stand is tupelo, blackgum, sweetgum, ash, oak, elm, maple, and associated species, except where pines comprise 25-49 percent of the stand.

Cypress: Bottomland forests in which 50 percent or more of the stand is cypress, except where pines comprise 25-49 percent of the stand.

## Stand-Size Classes

Sawtimber: Stands containing at least 1,500 board feet net volume per acre, 1/4-inch log rule, in sound, live, softwood trees 9.0 inches d.b.h. or larger, or hardwood trees 11.0 inches d.b.h. or larger. Two classes of sawtimber stands are recognized:

Large sawtimber: Stands of sawtimber having more than 50 percent of the net board-foot volume in trees 15.0 inches d.b.h. or larger.

Small sawtimber: Stands of sawtimber having 50 percent or less of the net board-foot volume in trees 15.0 inches d.b.h. or larger.

Poletimber: Stands failing to meet the minimum sawtimber specifications, but at least 10-percent stocked with trees 5.0 inches d.b.h. or larger and with at least half the minimum stocking in pole-size trees.

Seedling and saplings: Stands not qualifying as sawtimber or poletimber stands, but having at least a 10-percent stocking of trees of commercial species and with half the minimum stocking in seedlings and saplings.

Nonstocked and other areas: Forest areas not qualifying as sawtimber, poletimber, or seedling and sapling stands.

#### Diameters

D.b.h. (diameter at breast height): Stem diameter in inches, outside bark, measured at 4-1/2 feet above the ground.

Diameter class: All trees were tallied by 2-inch diameter classes, each class including diameters 1.0 inch below and 0.9 inch above the stated mid-point, e.g., trees 7.0 to and including 8.9 inches are included in the 8-inch class. Corresponding limits apply to other diameter classes.

#### Timber Quality Classification

##### Growing Stock

Sawtimber trees: Live softwood trees at least 9.0 inches d.b.h. and hardwood trees at least 11.0 inches d.b.h., with not less than one merchantable log 12 feet long, or with less than 50 percent of the gross volume of the tree in sound sawtimber.

Poletimber trees: Straight-boled trees between 5.0 inches d.b.h. and sawtimber size.

Sapling-size trees: Trees 1.0 inch to 4.9 inches d.b.h. which will grow into poletimber or sawtimber size trees of sound quality.

##### Other Material

Sound cull trees: Live trees of all sizes that are unmerchantable for sawlogs now or prospectively because of species, poor form, excessive limbiness, or other sound defect.

Rotten cull trees: Live trees of all sizes that are unmerchantable for sawlogs now or prospectively because of rotten defect.

Hardwood limbs: The limb volume of all hardwood sawtimber and cull trees to a minimum diameter of 4.0 inches inside bark.

### Species Groups

Yellow pines: Includes longleaf, slash, loblolly, pond, and shortleaf pine.

Other softwoods: Pondcypress, baldcypress, eastern redcedar, and Atlantic whitecedar.

Soft-textured hardwoods: Black and tupelo gum, yellow-poplar, sweetgum, cottonwood, soft maple, basswood, magnolia, sweetbay, and willow.

Hard-textured hardwoods: All of the oaks, hickories, ash, beech, elm, river birch, hackberry, sycamore, black locust, mulberry, black walnut, holly, dogwood, and persimmon.

### Volume Estimates

Board-foot volume: The volume in board feet, measured by the International 1/4-inch rule, exclusive of defect, of that portion of sound saw-timber trees between the stump and the upper limit of merchantability for sawlogs.

Volume in cords: For sound trees the volume in standard cords (including bark) of the sound portion of trees 5.0 inches d.b.h. and larger, between stump and a minimum top-stem diameter of 4.0 inches inside bark. Similar volumes are given for cull trees. The volume in limbs, in sections four feet long and at least 4.0 inches in diameter inside bark, of all saw-timber size hardwoods is shown separately.

Volume in cubic feet: Same as volume shown in cords except bark is not included.

International 1/4-inch log rule: A rule for estimating the board-foot volume of 4-foot log sections, according to the formula  $V = .905 (0.22D^2 - 0.71D)$ . The taper allowance for computing the volume in log lengths greater than four feet is 0.5 inch per 4-foot section. Allowance for saw kerf is 1/4 inch.

Standard cord: A stacked pile, 4 x 4 x 8 feet, of round or split bolts, estimated to contain, on the average, about 73 cubic feet of solid wood.

### Stocking

Stocking is the extent to which growing space is effectively utilized by trees. The number of stems present by d.b.h. classes was used as a basis for stocking classification. Areas having the minimum numbers of trees listed below, either in a single diameter class or proportionately in any combination of diameter classes, were considered fully stocked.

<u>D.b.h.</u>	<u>Minimum number trees per acre</u>
Seedlings	1,000
2 inches	800
4 inches	590
6 inches	400
8 inches	240
10 inches	155
12 inches	115
14 inches	90

### Growth and Drain

Net growth.--The estimated volume of net growth includes growth on the present growing stock plus the ingrowth accrual resulting from smaller trees reaching volume size. It excludes mortality, or loss of volume in trees dying from natural causes. Growth estimates are based on the volume or number of sound trees. Other material is not included.

In board feet: The change during the calendar year in sawtimber volume resulting from growth, ingrowth, and mortality losses.

In cubic feet or cords: The change during the calendar year in the volume of all sound trees 5.0 inches d.b.h. and larger resulting from growth, ingrowth, and mortality losses.

Timber drain.--The volume of timber drain is based on the measurement and tally of stumps found on regular ground sample plots. Stumps of all trees cut during the past three-year period were recorded and the measurements converted into equivalent tree volume. The average volume of drain for the three-year period was then taken as the annual estimate. Board-foot drain volumes include the sawlog portion of all sawtimber-size trees which were cut. Drain in cubic feet or cords includes the entire stem from stump to 4.0-inch top of all sound trees 5.0 inches in diameter and larger.

## RELIABILITY OF FOREST SURVEY DATA

In general, the errors which affect the accuracy of Forest Survey area and timber volume estimates arise from two sources. These may be described as (1) sampling errors which result from using sampling procedures rather than making a complete inventory or canvass, and (2) non-sampling errors which arise from human mistakes in judgment, measurement, recording, or arithmetic.

In Forest Survey work a diligent effort is made to maintain a high degree of accuracy in the collection and compilation of data. The sampling errors are held to a specified minimum through survey design and sampling technique. These errors are the only measurable errors involved in computing the reliability of the data. The non-sampling errors are minimized or eliminated through training, supervision, field check cruises, and complete editing and machine verification in compiling the data.

Forest area.--The sampling intensity of the 1952 survey was sufficient to provide an estimate of the total forest acreage in the Unit with a standard error of  $\pm 0.9$  percent. The probabilities are two out of three that the estimated forest acreage is within  $\pm 0.9$  percent of the actual acreage.

Cubic volume.--The standard error of the 1952 net cubic-foot volume in the Unit was  $\pm 2.2$  percent. Here again, the probabilities are two out of three that the estimated volume does not vary from the actual volume by more than this percentage. The standard error of the volume in cords was not computed but it should be approximately the same.

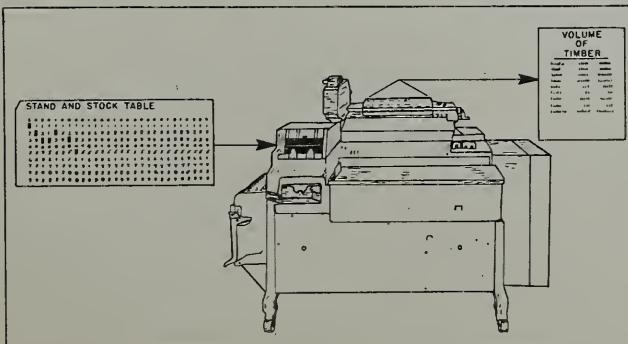
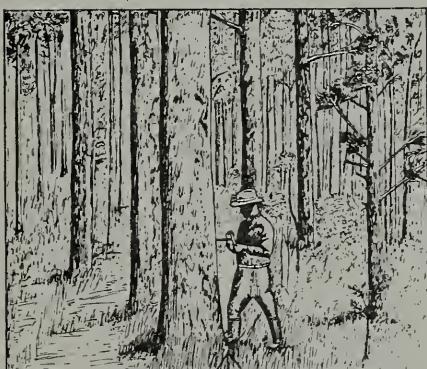
Board-foot volume.--The standard error of the 1952 estimate of board-foot volume in the Unit was  $\pm 2.6$  percent.

Use of county data.--The tables showing area and timber volumes by county are included to permit grouping of the data in any desired combinations. The survey was designed so that the number of sample plots taken in each county would provide an estimate of the timber volume in cubic feet which would not exceed  $\pm 15$  percent. The actual range of error of the cubic volume estimates by county is from  $\pm 7.4$  percent to  $\pm 12.2$  percent. The errors of board-foot volume estimates by county range from  $\pm 8.6$  percent to  $\pm 12.3$  percent, and of forest area from  $\pm 1.6$  percent to  $\pm 9.2$  percent.

In spite of the accuracy limit set on volume estimates by county, comparison of individual county statistics may be subject to considerable error and should be avoided. Grouping the data for a number of counties will increase the reliability and make the combined estimates sufficiently accurate for general use. For example, grouping the timber volume data for four counties with errors ranging from 7 to 12 percent resulted in a total volume estimate with only  $\pm 5$  percent error.

## HOW THE FOREST INVENTORY IS MADE

The present system of inventory is a two-step method which includes land-use classification of points on aerial photographs followed by the cruising of ground sample plots. The county is the basic work unit. The detailed procedure is as follows:



1. Preliminary estimates of the acreage of land in forests and other land-use classes are obtained by classifying points printed on every third aerial photograph in alternate flight lines within a county. The proportion of points falling in each class is used to estimate the acreage. This estimate is later checked and revised through the use of ground plots.
2. Ground sample plots are selected in a systematic manner from the forest land classifications made in Step 1, using an interval which will provide sufficient plots to meet established limits of error per billion cubic feet of timber. This results in a proportional sample of all existing timber stands. Timber cruisers make a detailed description and tally of the ground plots to obtain data on timber volume, quality, stocking, and mortality. Samples of agricultural and other photo classifications are also checked on the ground to verify or adjust the area estimates based on these classifications.
3. Growth estimates are based on increment borings taken proportionally from sample trees of various diameters and species in each forest type and stand class. The volume of timber drain is computed from a tally of the stumps of trees cut on the plots during a specified period.
4. All field data are sent to Asheville for editing and are placed on punch cards for machine sorting and tabulation. Final estimates are based on statistical summaries of the data.



FOREST SURVEY REPORTS PUBLISHED SINCE 1945

Southeastern Forest Experiment Station

- No. 21 - 1945 Pulpwood Production by County in the Carolinas and Virginia  
No. 22 - Southern Forests as a Source of Pulpwood  
No. 23 - 1946 Pulpwood Production by County in the Southeast  
No. 24 - Southern Pulpwood Production and the Timber Supply  
No. 25 - Forest Resources of the Lower Coastal Plain of South Carolina  
No. 26 - 1946 Commodity Drain by County from South Carolina Forests  
No. 27 - 1947 Pulpwood Production by County in the Southeast  
No. 28 - South Carolina's Forest Resources, 1947  
No. 29 - 1948 Pulpwood Production by County in the Southeast  
No. 30 - Forest Resources of Northeast Florida, 1949  
No. 31 - Forest Resources of Central Florida, 1949  
No. 32 - Forest Resources of Northwest Florida, 1949  
No. 33 - Forest Resources of South Florida, 1949  
No. 34 - Timber Production and Commodity Drain from Florida's Forests, 1948  
No. 35 - 1949 Pulpwood Production in the South (Out of print)  
No. 36 - Forest Statistics for Florida, 1949  
No. 37 - Forest Statistics for Southwest Georgia, 1951  
No. 38 - 1951 Pulpwood Production in the South  
No. 39 - Forest Statistics for Southeast Georgia, 1952  
No. 40 - Forest Statistics for Central Georgia, 1952

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- 1950 Pulpwood Production in the South. Forest Survey Release No. 69  
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